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AMENDMENT TO THE CLAIMS:

This listing of claims will replace all prior versions of claims in the application:

LISTING OF CLAIMS:

1. (Withdrawn) A method for forming a pole tip, comprising:
forming a pole tip layer of magnetic material;
adding a layer of polyimide precursor material;
adding an oxygen etch resistant layer above the layer of polyimide precursor material;
patterning the etch resistant layer;
exposing the polyamide precursor material layer to oxygen-containing plasma;
removing exposed portions of the cured polyimide precursor material for exposing portions of the pole tip layer; and
removing the exposed portions of the pole tip layer for forming a pole tip.
2. (Withdrawn) A method as recited in claim 1, wherein the curing converts at least a substantial portion of the polyimide precursor material to at least one of a polyimide and a polyimide-like material.
3. (Withdrawn) A method as recited in claim 1, wherein the oxygen etch-resistant layer is a silicon-containing resist.
4. (Withdrawn) A method as recited in claim 1, wherein the oxygen etch-resistant layer consists of a sputtered film.
5. (Withdrawn) A method as recited in claim 1, wherein the exposed portions of the cured polyimide precursor material are removed by reactive ion etching.

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6. (Withdrawn) A method as recited in claim 1, wherein the exposed portions of the pole tip layer are removed by milling.
7. (Withdrawn) A method as recited in claim 1, further comprising adding a first layer of material resistant to chemical mechanical polishing above the pole tip layer.
8. (Withdrawn) A method as recited in claim 1, further comprising adding a first layer of nonmagnetic material for substantially encapsulating the pole tip.
9. (Withdrawn) A method as recited in claim 8, further comprising adding a second layer of material resistant to chemical mechanical polishing above the layer of nonmagnetic material.
10. (Withdrawn) A method as recited in claim 1, wherein the remaining portion of the pole tip layer has a width of less than about 100 nm.
11. (Withdrawn) A pole tip formed according to the method recited in claim 1.
12. (Withdrawn) A method for forming a pole tip, comprising:
 - forming a pole tip layer of magnetic material;
 - adding a first layer of material resistant to chemical mechanical polishing above the pole tip layer;
 - adding a layer of polyimide precursor material above the first layer of material resistant to chemical mechanical polishing;
 - baking the polyimide precursor material;
 - adding an etch resistant layer above the layer of polyimide precursor material;
 - patterning the etch resistant layer;

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removing exposed portions of the polyimide precursor material for exposing portions of the pole tip layer;
removing the exposed portions of the pole tip layer for forming a pole tip;
adding a layer of nonmagnetic material for substantially encapsulating the pole tip;
adding a second layer of material resistant to chemical mechanical polishing above the layer of nonmagnetic material; and
polishing for removing material above the first layer of material resistant to polishing.

13. (Withdrawn) A method for forming a magnetic structure, comprising:
forming a layer of magnetic material;
adding a first layer of material resistant to chemical mechanical polishing above the pole tip layer;
adding a layer of polyimide precursor material above the first layer of material resistant to chemical mechanical polishing;
baking the polyimide precursor material;
adding an etch resistant layer above the layer of polyimide precursor material;
patterning the etch resistant layer;
removing the exposed portions of the polyimide precursor material for exposing portions of the layer of magnetic material;
removing the exposed portions of the layer of magnetic material;
adding a layer of nonmagnetic material for substantially encapsulating the remaining portion of the layer of magnetic material; and
polishing for removing material above the first layer of material resistant to polishing.
14. (Withdrawn) A method as recited in claim 13, wherein the etch resistant layer is formed of a silicon-containing resist.

15. (Withdrawn) A method as recited in claim 13, wherein the etch resistant layer is a glass-like material.
16. (Withdrawn) A method as recited in claim 13, wherein the baking coverts at least a substantial portion of the polyimide precursor material to at least one of a polyimide and a polyimide-like material.
17. (Withdrawn) A method as recited in claim 13, wherein the layer of nonmagnetic material has a thickness at least as great as a thickness of the layer of magnetic material.
18. (Withdrawn) A method as recited in claim 13, wherein the layer of nonmagnetic material has a thickness greater than a thickness of the layer of magnetic material, wherein the layer of nonmagnetic material forms a plane that is above a top surface of the layer of magnetic material.
19. (Withdrawn) A method as recited in claim 13, further comprising adding a second layer of material resistant to chemical mechanical polishing above the layer of nonmagnetic material.
20. (Withdrawn) A method as recited in claim 19, wherein a lower surface of the second layer of material resistant to chemical mechanical polishing lies above a plane positioned above a plane extending along an upper surface of the pole tip.
21. (Withdrawn) A method as recited in claim 13, wherein the magnetic structure has a width of less than 100 nm.
22. (Cancelled)

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23. (Currently amended) A perpendicular pole tip structure, comprising:
a pole tip layer of magnetic material having a top surface, a bottom surface, and
sides extending between the top and bottom surface;
layers of non-magnetic materials surrounding the layers of magnetic material
towards the sides of the pole tip layer; and
~~interface~~ CMP resistant layers above the non-magnetic material, portions of the
~~interface~~ CMP resistant layers lying along a plane substantially parallel
to the top surface of the pole tip layer;
~~wherein portions of the interface layers taper towards the pole tip layer at a slope
that is from about one to about five times a thickness of the pole tip
layer, where the thickness of the pole tip layer is defined between the top
and bottom surfaces thereof.~~
24. (Currently amended) A perpendicular pole tip structure as recited in claim 23,
wherein each of the ~~interface~~ CMP resistant layers includes a layer of diamond
like carbon (DLC) ~~chemical polishing resistant material~~.
25. (Original) A perpendicular pole tip structure as recited in claim 23, further
comprising a layer of chemical mechanical polishing resistant material above the
top surface of the pole tip layer.
26. (Currently amended) A magnetic storage system, comprising:
magnetic media;
at least one perpendicular head for reading from and writing to the magnetic
media, the head comprising:
a pole tip layer of magnetic material having a top surface, a bottom surface, and
sides extending between the top and bottom surface;

layers of non-magnetic materials surrounding the layer of magnetic material towards the sides of the pole tip layer; and
interface CMP resistant layers above the non-magnetic material, portions of the interface CMP resistant layers lying along a plane substantially parallel to the top surface of the pole tip layer, ~~wherein portions of the interface layers taper towards the pole tip layer at a slope that is from about one to about five times a thickness of the pole tip layer, wherein the thickness of the pole tip layer is defined between the top and bottom surfaces thereof;~~
a slider for supporting the head; and
a control unit coupled to the head for controlling operation of the head.

27. (Currently amended) A magnetic storage system as recited in claim 26, wherein each of the interface CMP resistant layers includes a layer of diamond like carbon (DLC) ~~chemical mechanical polishing resistant material~~.
28. (Original) A magnetic storage system as recited in claim 26, further comprising a layer of chemical mechanical polishing resistant material above the top surface of the pole tip layer.
29. (New) A perpendicular pole tip structure as in claim 23 wherein the non-magnetic layers comprise alumina.
30. (New) A magnetic storage system as in claim 26 wherein the non-magnetic layers comprise alumina.
31. (New) A pole tip structure as in claim 25 wherein the CMP resistant material above the top surface of the pole tip layer comprises diamond like carbon (DLC).

32. (New) A magnetic storage system as in claim 28 wherein the CMP resistant material above the top surface of the pole tip layer comprises diamond like carbon (DLC).

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